

FILE 'HOME' ENTERED AT 15:26:52 ON 08 JUL 2003

=> file reg	SINCE FILE	TOTAL
COST IN U.S. DOLLARS	ENTRY	SESSION
FULL ESTIMATED COST	1.05	1.05

FILE 'REGISTRY' ENTERED AT 15:29:50 ON 08 JUL 2003  
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STRUCTURE FILE UPDATES: 7 JUL 2003 HIGHEST RN 544408-69-7  
DICTIONARY FILE UPDATES: 7 JUL 2003 HIGHEST RN 544408-69-7

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2003

Please note that search-term pricing does apply when  
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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP  
PROPERTIES for more information. See STN Note 27, Searching Properties  
in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> s 1/Li and 0.01-0.99/Ni and 0.01-8.9/Co and 0.11-0.59/Mn and 2/O  
85467 1/LI  
17304 0.01-0.99/NI  
307124 0.01-8.9/CO  
7371 0.11-0.59/MN  
4168836 2/O  
L1 248 1/LI AND 0.01-0.99/NI AND 0.01-8.9/CO AND 0.11-0.59/MN AND 2/O

=> s 1-1.2/Li and 2/Mn and 4/O  
85467 1-1.2/LI  
10566 2/MN  
3107120 4/O  
L2 404 1-1.2/LI AND 2/MN AND 4/O

=> file caplus	SINCE FILE	TOTAL
COST IN U.S. DOLLARS	ENTRY	SESSION
FULL ESTIMATED COST	35.36	36.41

FILE 'CAPLUS' ENTERED AT 15:32:29 ON 08 JUL 2003  
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FILE COVERS 1907 - 8 Jul 2003 VOL 139 ISS 2  
FILE LAST UPDATED: 7 Jul 2003 (20030707/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> s l1

L3 87 L1

=> s l2

L4 2514 L2

=> s l3 and l4

L5 13 L3 AND L4

=> s l5 and (battery or cell)

100135 BATTERY

1666940 CELL

L6 13 L5 AND (BATTERY OR CELL)

=> d l6 1-13 ibib ab kwic

L6 ANSWER 1 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:374005 CAPLUS

DOCUMENT NUMBER: 138:371736

TITLE: Active mass for **battery**, its manufacture and  
the **battery**

INVENTOR(S): Cho, Jae Phil; Jung, Won Ll; Park, Yong Chul; Kim,  
Geun Bae

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003142097	A2	20030516	JP 2002-260246	20020905
US 2003049529	A1	20030313	US 2002-91335	20020306
PRIORITY APPLN. INFO.: US 2001-316949P	P	20010905		
			US 2002-91335	A 20020306
			KR 2002-12570	A 20020308

AB The active mass has a coating layer, contg. a mixt. of a conductor and a  
conductive polymeric dispersant, on a electrochem. oxidizable-reducible  
material; and is prepd. by coating the mixt. on the electrochem.  
oxidizable-reducible material. The **battery** has a separator  
between a cathode and an anode; where the cathode and/or the anode  
contains the above active mass on a current collector.

TI Active mass for **battery**, its manufacture and the **battery**

AB The active mass has a coating layer, contg. a mixt. of a conductor and a  
conductive polymeric dispersant, on a electrochem. oxidizable-reducible  
material; and is prepd. by coating the mixt. on the electrochem.  
oxidizable-reducible material. The **battery** has a separator  
between a cathode and an anode; where the cathode and/or the anode  
contains the above active mass on a current collector.

ST **battery** electrode active material coating manuf; coating  
conductor polymer dispersant mixt

IT **Battery** electrodes

(manuf. of active mass contg. mixts. of conductors and polymer  
dispersants coated on electrochem. oxidizable-reducible materials for

**battery electrodes)**

IT Gelatins, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (manuf. of active mass contg. mixts. of conductors and polymer dispersants coated on electrochem. oxidizable-reducible materials for **battery electrodes)**

IT Dispersing agents  
 (oroton; manuf. of active mass contg. mixts. of conductors and polymer dispersants coated on electrochem. oxidizable-reducible materials for **battery electrodes)**

IT 7440-44-0, Super P, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (activated; manuf. of active mass contg. mixts. of conductors and polymer dispersants coated on electrochem. oxidizable-reducible materials for **battery electrodes)**

IT 1314-23-4, Zirconia, uses 7440-21-3, Silicon, uses 7782-42-5, Graphite, uses 7784-30-7, Aluminum phosphate (AlPO<sub>4</sub>) 9003-11-6, Ethylene oxide-propylene oxide copolymer 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12190-79-3, Cobalt lithium oxide (CoLi<sub>2</sub>O<sub>2</sub>) 18282-10-5, Tin oxide (SnO<sub>2</sub>) 262857-75-0, Cobalt lithium nickel strontium oxide (Co<sub>0.1</sub>LiNi<sub>0.9</sub>Sr<sub>0.002</sub>O<sub>2</sub>) 499969-49-2, Aluminum cobalt lithium magnesium manganese nickel oxide (Al<sub>0.05</sub>Co<sub>0.1</sub>LiMg<sub>0.05</sub>Mn<sub>0.25</sub>Ni<sub>0.66</sub>O<sub>2</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (manuf. of active mass contg. mixts. of conductors and polymer dispersants coated on electrochem. oxidizable-reducible materials for **battery electrodes)**

L6 ANSWER 2 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:373988 CAPLUS  
 DOCUMENT NUMBER: 138:371722  
 TITLE: Secondary lithium **battery**  
 INVENTOR(S): Kato, Fumio; Oura, Takafumi; Takeno, Mitsuhiro; Koshina, Shigeru  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003142075	A2	20030516	JP 2001-337634	20011102
PRIORITY APPLN. INFO.:			JP 2001-337634	20011102
AB	The <b>battery</b> has an anode contg. an active mass mixt., having d. 1.4-1.8 g/cm <sup>3</sup> , on a Cu foil, and a cathode contg. an active mass mixt., having d 3.3-3.7 g/cm <sup>3</sup> on an Al foil; where the anode active mass mixt. contains graphite and a graphitization resistant carbonaceous material, and the cathode active mass mixt. is selected from a LiMn <sub>2</sub> O <sub>4</sub> -LiNiO <sub>2</sub> mixt., LiMnxNi <sub>1-x</sub> O <sub>2</sub> , LiMn <sub>2</sub> O <sub>4</sub> -LiNiO <sub>2</sub> -LiCoO <sub>2</sub> mixt., and LiMnyNinzCo <sub>1-y-z</sub> O <sub>2</sub> . Ni in LiNiO <sub>2</sub> may be partially replaced by Co and/or Al ions.			
TI	Secondary lithium <b>battery</b>			
AB	The <b>battery</b> has an anode contg. an active mass mixt., having d. 1.4-1.8 g/cm <sup>3</sup> , on a Cu foil, and a cathode contg. an active mass mixt., having d 3.3-3.7 g/cm <sup>3</sup> on an Al foil; where the anode active mass mixt. contains graphite and a graphitization resistant carbonaceous material, and the cathode active mass mixt. is selected from a LiMn <sub>2</sub> O <sub>4</sub> -LiNiO <sub>2</sub> mixt., LiMnxNi <sub>1-x</sub> O <sub>2</sub> , LiMn <sub>2</sub> O <sub>4</sub> -LiNiO <sub>2</sub> -LiCoO <sub>2</sub> mixt., and LiMnyNinzCo <sub>1-y-z</sub> O <sub>2</sub> . Ni in LiNiO <sub>2</sub> may be partially replaced by Co and/or Al ions.			
ST	secondary lithium <b>battery</b> electrode active mass mixt			
IT	12031-65-1, Lithium nickel oxide (LiNiO <sub>2</sub> ) 12057-17-9, Lithium manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> ) 12190-79-3, Cobalt lithium oxide (CoLiO <sub>2</sub> )			

143623-51-2, Cobalt lithium nickel oxide (Co<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>) 179186-44-8,  
 Lithium manganese nickel oxide (LiMn<sub>0.4</sub>Ni<sub>0.6</sub>O<sub>2</sub>) 190902-69-3, Aluminum  
 lithium nickel oxide (Al<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>) 193214-22-1, Aluminum cobalt  
 lithium nickel oxide (Al<sub>0.05</sub>Co<sub>0.1</sub>LiNi<sub>0.85</sub>O<sub>2</sub>) 404904-11-6, Cobalt  
 lithium manganese nickel oxide (Co<sub>0.4</sub>LiMn<sub>0.3</sub>Ni<sub>0.3</sub>O<sub>2</sub>)  
 RL: DEV (Device component use); USES (Uses)  
 (compns. and controlled d. of cathode active mass mixts. for secondary  
 lithium batteries)

L6 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:355675 CAPLUS

DOCUMENT NUMBER: 138:371699

TITLE: Cathode active material for a rechargeable lithium  
**battery** having structural stability and  
 improved cyclelife characteristics

INVENTOR(S): Cho, Jae-Phil; Park, Byung-Woo; Kim, Yong-Jeong; Kim,  
 Tae-Jun

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003087155	A1	20030508	US 2002-270811	20021015
JP 2003178759	A2	20030627	JP 2002-308368	20021023

PRIORITY APPLN. INFO.: KR 2001-65805 A 20011024

AB A pos. active material for a rechargeable lithium **battery** is  
 provided. The pos. active material comprises a lithiated intercalation  
 compd. and a coating layer formed on the lithiated intercalation compd.  
 The coating layer comprises a solid-soln. compd. and an oxide compd.  
 having at least two coating elements, the oxide compd. represented by the  
 formula: M<sub>p</sub>M'<sub>q</sub>O<sub>r</sub> wherein M and M' are not the same and are each  
 independently at least one element selected from the group consisting of  
 Zr, Al, Na, K, Mg, Ca, Sr, Ni, Co, Ti, Sn, Mn, Cr, Fe, and V; 0<p<1;  
 0<q<1; and 1<r.ltoreq.2, where r is detd. based upon p and q. The  
 solid-soln. compd. is prepd. by reacting the lithiated intercalation  
 compd. with the oxide compd. The coating layer has a fracture toughness  
 of at least 3.5 MPam<sup>1/2</sup>. A method of making the pos. active material is  
 also provided.

TI Cathode active material for a rechargeable lithium **battery**  
 having structural stability and improved cyclelife characteristics

AB A pos. active material for a rechargeable lithium **battery** is  
 provided. The pos. active material comprises a lithiated intercalation  
 compd. and a coating layer formed on the lithiated intercalation compd.  
 The coating layer comprises a solid-soln. compd. and an oxide compd.  
 having at least two coating elements, the oxide compd. represented by the  
 formula: M<sub>p</sub>M'<sub>q</sub>O<sub>r</sub> wherein M and M' are not the same and are each  
 independently at least one element selected from the group consisting of  
 Zr, Al, Na, K, Mg, Ca, Sr, Ni, Co, Ti, Sn, Mn, Cr, Fe, and V; 0<p<1;  
 0<q<1; and 1<r.ltoreq.2, where r is detd. based upon p and q. The  
 solid-soln. compd. is prepd. by reacting the lithiated intercalation  
 compd. with the oxide compd. The coating layer has a fracture toughness  
 of at least 3.5 MPam<sup>1/2</sup>. A method of making the pos. active material is  
 also provided.

ST lithium secondary **battery** cathode active material

IT **Battery** cathodes

(cathode active material for rechargeable lithium **battery**  
 having structural stability and improved cyclelife characteristics)

IT Secondary batteries

(lithium; cathode active material for rechargeable lithium

- battery** having structural stability and improved cyclelife characteristics)
- IT 116327-69-6P, Cobalt lithium nickel oxide ( $\text{Co}_{0.1}\text{LiNi}_{0.9}\text{O}_2$ )  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (aluminum cobalt lithium nickel zirconium oxide solid soln.-coated, substrate particles, strontium doped; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 163596-49-4P, Lithium manganese nickel oxide ( $\text{LiMn}_{0.2}\text{Ni}_{0.8}\text{O}_2$ )  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (aluminum lithium manganese nickel zirconium oxide solid soln.-coated, substrate particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 12057-17-9P, Lithium manganese oxide ( $\text{LiMn}_2\text{O}_4$ )  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (aluminum lithium manganese zirconium oxide solid soln.-coated, substrate particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 67-63-0D, Isopropanol, aluminum and nickel complexes 149-57-5D,  
 2-Ethylhexanoic acid, aluminum and nickel complexes 7429-90-5D,  
 Aluminum, mixed 2-ethylhexanoato and 2-propanolato complexes 7440-02-0D,  
 Nickel, mixed 2-ethylhexanoato and 2-propanolato complexes 521980-95-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 521981-00-0P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on aluminum cobalt lithium magnesium manganese nickel oxide particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 406939-73-9P, Aluminum cobalt lithium magnesium manganese nickel oxide ( $\text{Al}_{0.07}\text{Co}_{0.1}\text{Li}_{1.03}\text{Mg}_{0.07}\text{Mn}_{0.19}\text{Ni}_{0.69}\text{O}_2$ )  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (coatings, on aluminum cobalt lithium magnesium manganese nickel zirconium oxide particles, substrate; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 521980-97-2P, Aluminum lithium nickel zirconium oxide  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on cobalt lithium nickel oxide particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 191025-46-4DP, Cobalt lithium nickel zirconium oxide, surface coated on cobalt lithium oxide particles  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on cobalt lithium oxide, substrate particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)
- IT 521980-99-4P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on lithium manganese nickel oxide particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)

IT 521980-98-3P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on lithium manganese oxide particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)

IT 521980-96-1P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on metal oxides, strontium doped and undoped; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)

IT 521980-93-8DP, Aluminum zirconium oxide (AlZrO<sub>4</sub>), solid solns. with aluminum cobalt lithium zirconium oxide 521980-94-9DP, Aluminum cobalt lithium zirconium oxide (Al<sub>0</sub>-0.2Co<sub>0.4</sub>-1LiZr<sub>0</sub>-0.2O<sub>2</sub>), solid solns. with aluminum zirconium oxide  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (coatings, on metal oxides; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)

IT 12031-65-1P, Lithium nickel oxide (LiNiO<sub>2</sub>)  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (metal oxide-coated, substrate particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)

IT 12190-79-3P, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (mixed metal oxide solid soln.-coated, substrate particles; cathode active material for rechargeable lithium **battery** having structural stability and improved cyclelife characteristics)

L6 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:300503 CAPLUS  
 DOCUMENT NUMBER: 138:290458  
 TITLE: Method for preparation of cathode active material for lithium secondary **battery**  
 INVENTOR(S): Kweon, Ho-Jin; Suh, Jun-Won  
 PATENT ASSIGNEE(S): Samsung SDI, Co., Ltd., S. Korea  
 SOURCE: U.S. Pat. Appl. Publ., 22 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003073004	A1	20030417	US 2002-269991	20021015
PRIORITY APPLN. INFO.:			KR 2001-64095	A 20011017
AB	A process of manufg. a pos. active material for a lithium secondary <b>battery</b> includes prep. a coating-element-contg. org. suspension by adding a coating-element source to an org. solvent, adding water to the suspension to prep. a coating liq., coating a pos. active material with the coating liq., and drying the coated pos. active material.			
TI	Method for preparation of cathode active material for lithium secondary <b>battery</b>			
AB	A process of manufg. a pos. active material for a lithium secondary <b>battery</b> includes prep. a coating-element-contg. org. suspension by adding a coating-element source to an org. solvent, adding water to the suspension to prep. a coating liq., coating a pos. active material with the coating liq., and drying the coated pos. active material.			

ST lithium secondary **battery** cathode active material

IT Alkali metals, uses  
Alkaline earth metals  
Group IIIA elements  
Group IVA elements  
Group VA elements  
Transition metals, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coating element; method for prepn. of cathode active material for  
lithium secondary **battery**)

IT Chalcogenides  
Oxides (inorganic), uses  
RL: DEV (Device component use); USES (Uses)  
(lithiated; method for prepn. of cathode active material for lithium  
secondary **battery**)

IT Secondary batteries  
(lithium; method for prepn. of cathode active material for lithium  
secondary **battery**)

IT **Battery** cathodes  
Coating materials  
(method for prepn. of cathode active material for lithium secondary  
**battery**)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-09-7,  
Potassium, uses 7440-21-3, Silicon, uses 7440-23-5, Sodium, uses  
7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-38-2, Arsenic,  
uses 7440-42-8, Boron, uses 7440-48-4, Cobalt, uses 7440-55-3,  
Gallium, uses 7440-56-4, Germanium, uses 7440-62-2, Vanadium, uses  
7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coating element; method for prepn. of cathode active material for  
lithium secondary **battery**)

IT 555-31-7, Aluminum isopropoxide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coating; method for prepn. of cathode active material for lithium  
secondary **battery**)

IT 12057-17-9, Lithium manganese oxide  $\text{LiMn}_2\text{O}_4$  12190-79-3, Cobalt  
lithium oxide  $\text{CoLiO}_2$  262857-75-0, Cobalt lithium nickel strontium oxide  
 $\text{Co}_0.1\text{LiNi}_0.9\text{Sr}_0.002\text{O}_2$  406939-73-9, Aluminum cobalt lithium  
magnesium manganese nickel oxide  $\text{Al}_0.07\text{Co}_0.1\text{Li}_1.03\text{Mg}_0.07\text{Mn}_0.19\text{Ni}_0.69\text{O}_2$   
RL: DEV (Device component use); USES (Uses)  
(method for prepn. of cathode active material for lithium secondary  
**battery**)

IT 64-17-5, Ethanol, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(method for prepn. of cathode active material for lithium secondary  
**battery**)

L6 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:222213 CAPLUS

DOCUMENT NUMBER: 138:240689

TITLE: Method for preparation of **battery** active  
material with excellent electrochemical  
characteristics and thermal stability

INVENTOR(S): Kweon, Ho-Jin; Suh, Jun-Won; Yoon, Jang-Ho; Park,  
Jung-Joon

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 25 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND DATE

APPLICATION NO. DATE

US 2003054250	A1	20030320	US 2002-189384	20020708
CN 1399363	A	20030226	CN 2002-2126435	20020719
JP 2003100296	A2	20030404	JP 2002-210922	20020719
PRIORITY APPLN. INFO.:			KR 2001-43554	A 20010719

- AB An active material for a **battery** has a surface treatment layer that includes a conductive agent and at least one coating-element-contg. compd. selected from the group consisting of a coating-element-contg. hydroxide, a coating-element-contg. oxyhydroxide, a coating-element-contg. oxycarbonate, a coating-element-contg. hydroxycarbonate, and a mixt. thereof.
- TI Method for preparation of **battery** active material with excellent electrochemical characteristics and thermal stability
- AB An active material for a **battery** has a surface treatment layer that includes a conductive agent and at least one coating-element-contg. compd. selected from the group consisting of a coating-element-contg. hydroxide, a coating-element-contg. oxyhydroxide, a coating-element-contg. oxycarbonate, a coating-element-contg. hydroxycarbonate, and a mixt. thereof.
- ST **battery** electrode active material
- IT Alkali metals, uses  
Alkaline earth metals  
Group IIIA elements  
Group IVA elements  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coating; method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT Chalcogenides  
Intercalation compounds  
Oxides (inorganic), uses  
RL: DEV (Device component use); USES (Uses)  
(lithiated; method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT **Battery** cathodes  
(method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT Carbonaceous materials (technological products)  
RL: DEV (Device component use); USES (Uses)  
(method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT Fluoropolymers, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT Metals, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT 116327-69-6, Cobalt lithium nickel oxide  $\text{Co}_{0.1}\text{LiNi}_{0.9}\text{O}_2$   
RL: DEV (Device component use); USES (Uses)  
(Sr-doped; method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-09-7, Potassium, uses 7440-21-3, Silicon, uses 7440-23-5, Sodium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-38-2, Arsenic, uses 7440-42-8, Boron, uses 7440-48-4, Cobalt, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coating; method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)
- IT 7440-24-6, Strontium, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(cobalt lithium nickel oxide doped with; method for prepn. of



**battery** active material with excellent electrochem. characteristics and thermal stability)

IT 555-31-7, Aluminum isopropoxide 13780-71-7, Boronic acid  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
 (method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethylcarbonate  
 12057-17-9, Lithium manganese oxide  $\text{LiMn}_2\text{O}_4$  12190-79-3, Cobalt lithium oxide  $\text{CoLiO}_2$  18282-10-5, Tin dioxide 21324-40-3, Lithium hexafluorophosphate 24623-77-6, Aluminum hydroxide oxide  $\text{AlOOH}$   
 501662-97-1  
 RL: DEV (Device component use); USES (Uses)  
 (method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 24937-79-9, Pvd  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (method for prepn. of **battery** active material with excellent electrochem. characteristics and thermal stability)

L6 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:203522 CAPLUS

DOCUMENT NUMBER: 138:207860

TITLE: A method for preparation of active material for **battery**

INVENTOR(S): Cho, Jae-Phil; Jung, Won-Il; Park, Yong-Chul; Kim, Geun-Bae

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Eur. Pat. Appl., 31 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1291941	A2	20030312	EP 2002-19772	20020904
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
US 2003049529	A1	20030313	US 2002-91335	20020306
PRIORITY APPLN. INFO.:			US 2001-316949P	P 20010905
			US 2002-91335	A 20020306

AB An active material for a **battery** is provided with a coating layer including either a conductive agent, or a coating layer having a mixt. of a conductive agent, and a conductive polymeric dispersant. The material comprises one of a metal, a Li-contg. alloy, a S-based compd., compds. that reversibly form Li-contg. compds. by a reaction with Li ions, and a lithiated intercalation compd. that reversibly intercalates/deintercalates the Li ions.

TI A method for preparation of active material for **battery**

AB An active material for a **battery** is provided with a coating layer including either a conductive agent, or a coating layer having a mixt. of a conductive agent, and a conductive polymeric dispersant. The material comprises one of a metal, a Li-contg. alloy, a S-based compd., compds. that reversibly form Li-contg. compds. by a reaction with Li ions, and a lithiated intercalation compd. that reversibly intercalates/deintercalates the Li ions.

ST **battery** electrode active material prepn

IT Conducting polymers  
 (dispersant; method for prepn. of active material for **battery**)

IT Polyoxyalkylenes, uses  
 RL: MOA (Modifier or additive use); USES (Uses)

(dispersant; method for prepn. of active material for **battery**)

IT Carbonaceous materials (technological products)  
Chalcogenides  
Oxides (inorganic), uses  
RL: DEV (Device component use); USES (Uses)  
(lithiated; method for prepn. of active material for **battery**)

IT Intercalation compounds  
RL: DEV (Device component use); USES (Uses)  
(lithium; method for prepn. of active material for **battery**)

IT **Battery** electrodes  
Coating materials  
Dispersing agents  
(method for prepn. of active material for **battery**)

IT Gelatins, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(method for prepn. of active material for **battery**)

IT Polysulfides  
RL: DEV (Device component use); USES (Uses)  
(org.; method for prepn. of active material for **battery**)

IT 7784-30-7, Aluminum phosphate  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coating; method for prepn. of active material for **battery**)

IT 79-10-7D, Acrylic acid, esters, copolymers with acrylonitrile and styrene  
100-42-5D, Styrene, copolymers with acrylonitrile and acrylate esters  
107-13-1D, Acrylonitrile, copolymers with styrene and acrylate esters  
108-32-7, Propylene carbonate 9002-86-2, Polyvinyl chloride 9003-54-7,  
Acrylonitrile-styrene copolymer 9003-56-9, Abs polymer 9010-94-0,  
Acrylonitrile-butadiene-methyl methacrylate-styrene copolymer  
25322-68-3, Peo 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses  
106392-12-5, Ethylene oxide-propylene oxide block copolymer  
RL: MOA (Modifier or additive use); USES (Uses)  
(dispersant; method for prepn. of active material for **battery**)

IT 7440-44-0, Carbon, uses  
RL: DEV (Device component use); USES (Uses)  
(lithiated; method for prepn. of active material for **battery**)

IT 1332-29-2, Tin oxide 7440-21-3, Silicon, processes 22465-17-4,  
Titanium nitrate  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(method for prepn. of active material for **battery**)

IT 1314-23-4, Zirconium oxide (ZrO<sub>2</sub>), uses 7704-34-9D, Sulfur, compd.  
11102-77-5 **12057-17-9**, Lithium manganese oxide  $\text{LiMn}_2\text{O}_4$   
12190-79-3, Cobalt lithium oxide  $\text{CoLiO}_2$  12798-95-7 18282-10-5, Tin  
dioxide 53680-59-4 74432-42-1, Lithium polysulfide 262857-75-0,  
Cobalt lithium nickel strontium oxide  $\text{Co}_0.1\text{LiNi}_0.9\text{Sr}_0.002\text{O}_2$   
**499969-49-2**  
RL: DEV (Device component use); USES (Uses)  
(method for prepn. of active material for **battery**)

IT 329184-61-4, Degressal sd40  
RL: MOA (Modifier or additive use); USES (Uses)  
(method for prepn. of active material for **battery**)

IT 7439-93-2, Lithium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium,  
uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(method for prepn. of active material for **battery**)

L6 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:203260 CAPLUS

DOCUMENT NUMBER: 138:224222

TITLE: Anode active material and nonaqueous electrolyte  
**battery**

INVENTOR(S): Inagaki, Hiroki; Takami, Norio

PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 30 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003049541	A1	20030313	US 2002-108435	20020329
JP 2003086177	A2	20030320	JP 2002-97651	20020329
PRIORITY APPLN. INFO.:			JP 2001-95027	A 20010329
			JP 2001-95029	A 20010329
			JP 2001-198088	A 20010629

OTHER SOURCE(S): MARPAT 138:224222

AB Disclosed is a nonaq. electrolyte **battery**, comprising a pos. electrode contg. a pos. electrode active material, a neg. electrode contg. a sulfide contg. Fe, and a nonaq. electrolyte including a nonaq. solvent and a solute dissolved in the nonaq. solvent, the nonaq. solvent contg. a first solvent contg. a cyclic carbonate and a second solvent contg. a chain carbonate, wherein the content of the first solvent in the nonaq. solvent falls within a range of 4.8-29% by vol. and the content of the second solvent in the nonaq. solvent falls within a range of 71-95.2% by vol.

TI Anode active material and nonaqueous electrolyte **battery**

AB Disclosed is a nonaq. electrolyte **battery**, comprising a pos. electrode contg. a pos. electrode active material, a neg. electrode contg. a sulfide contg. Fe, and a nonaq. electrolyte including a nonaq. solvent and a solute dissolved in the nonaq. solvent, the nonaq. solvent contg. a first solvent contg. a cyclic carbonate and a second solvent contg. a chain carbonate, wherein the content of the first solvent in the nonaq. solvent falls within a range of 4.8-29% by vol. and the content of the second solvent in the nonaq. solvent falls within a range of 71-95.2% by vol.

ST anode active material nonaq electrolyte **battery**

IT **Battery** anodes

Secondary batteries

(anode active material and nonaq. electrolyte **battery**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 623-53-0, Ethyl methyl carbonate 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer **12057-17-9**, Lithium manganese oxide  $\text{LiMn}_2\text{O}_4$  12190-79-3, Cobalt lithium oxide  $\text{CoLiO}_2$  14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 42821-47-6, Iron thiophosphate  $\text{FePS}_3$  62974-69-0, Iron sulfide  $\text{Fe}_9\text{S}_{10}$  90076-65-6 191024-83-6, Cobalt lithium manganese nickel oxide  $\text{Co}_0.4\text{LiMn}_0.1\text{Ni}_0.5\text{O}_2$  193214-25-4, Aluminum cobalt lithium nickel oxide  $\text{Al}_0.05\text{Co}_0.2\text{LiNi}_0.75\text{O}_2$  193214-37-8, Aluminum cobalt lithium nickel oxide  $\text{Al}_0.1\text{Co}_0.15\text{LiNi}_0.75\text{O}_2$  **193215-05-3**, Cobalt lithium manganese nickel oxide  $\text{Co}_0.2\text{LiMn}_0.2\text{Ni}_0.6\text{O}_2$  223923-05-5, Cobalt lithium manganese nickel oxide  $\text{Co}_0.3\text{LiMn}_0.1\text{Ni}_0.6\text{O}_2$  500756-34-3, Copper iron sulfide  $(\text{Cu}_0.27\text{Fe}_8.73\text{S}_{10})$  500756-35-4, Iron nickel sulfide  $(\text{Fe}_9.7\text{Ni}_0.3\text{S}_{11})$  500756-36-5 500756-37-6, Cobalt lithium nickel niobium oxide  $(\text{Co}_0.2\text{LiNi}_0.75\text{Nb}_0.05\text{O}_2)$

RL: DEV (Device component use); USES (Uses)

(anode active material and nonaq. electrolyte **battery**)

L6 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:407243 CAPLUS

DOCUMENT NUMBER: 137:8603

TITLE: Cathode active mass for secondary lithium **battery** and its manufacture

INVENTOR(S): Kwon, Ho Jin; Soo, Jun Won; Chung, Won Il

PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002158011	A2	20020531	JP 2001-292095	20010925
CN 1346160	A	20020424	CN 2001-137172	20010915
US 2002110736	A1	20020815	US 2001-964263	20010925
PRIORITY APPLN. INFO.:			KR 2000-56246	A 20000925
			KR 2001-36767	A 20010626

AB The cathode active mass has a Li compd. contg. core of secondary particles, having av. diam. 1-10 .mu.m and contg. .gtoreq.1 primary particles having av. diam. 1-3 .mu.m, coated with a layer of oxide, hydroxide, oxyhydroxide, oxycarbonate, and/or hydroxy carbonate of a coating material. The Li compd. is selected from various Li transition metal oxides, which may contain F, S, and/or P. The active mass is prepd. by coating the secondary particles with an aq. or org. soln. of a compd. of the coating material, and heat treating the coated particles.

TI Cathode active mass for secondary lithium **battery** and its manufacture

ST secondary **battery** cathode lithium transition metal oxide particle coating

IT **Battery** cathodes  
 (structure and manuf. of coated lithium transition metal oxide secondary particles for secondary lithium **battery** cathodes)

IT 1344-28-1, Aluminum oxide, uses  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (structure and manuf. of alumina coated lithium cobaltate secondary particles for secondary lithium **battery** cathodes)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (structure and manuf. of alumina coated lithium manganese oxide secondary particles for secondary lithium **battery** cathodes)

IT 1303-86-2, Boron oxide, uses  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (structure and manuf. of boron oxide coated lithium cobaltate secondary particles for secondary lithium **battery** cathodes)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (structure and manuf. of coated lithium cobaltate secondary particles for secondary lithium **battery** cathodes)

IT 116327-69-6, Cobalt lithium nickel oxide (Co0.1LiNi0.9O2)  
 406939-73-9  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (structure and manuf. of coated lithium transition metal oxide secondary particles for secondary lithium **battery** cathodes)

L6 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:372947 CAPLUS

DOCUMENT NUMBER: 137:297251

TITLE: A comparison of the electrode/electrolyte reaction at elevated temperatures for various Li-ion **battery** cathodes

AUTHOR(S): MacNeil, D. D.; Lu, Zhonghua; Chen, Zhaohui; Dahn, J.

R.  
CORPORATE SOURCE: Department of Chemistry, Dalhousie University,  
Halifax, NS, B3H 3J5, Can.  
SOURCE: Journal of Power Sources (2002), 108(1-2), 8-14  
CODEN: JPSODZ; ISSN: 0378-7753  
PUBLISHER: Elsevier Science B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Differential scanning calorimetry (DSC) was used to compare the thermal  
stability of charged cathodes in 1 M LiPF<sub>6</sub> EC/DEC electrolyte. Seven  
possible cathode materials for lithium-ion batteries (LiCoO<sub>2</sub>, LiNiO<sub>2</sub>,  
LiNi<sub>0.8</sub>Co<sub>0.2</sub>O<sub>2</sub>, Li<sub>1+x</sub>Mn<sub>2-x</sub>O<sub>4</sub>, LiNi<sub>0.7</sub>Co<sub>0.2</sub>Ti<sub>0.05</sub>Mg<sub>0.05</sub>O<sub>2</sub>,  
Li[Ni<sub>3/8</sub>Co<sub>1/4</sub>Mn<sub>3/8</sub>]O<sub>2</sub>, and LiFePO<sub>4</sub>) were tested under the same conditions.  
Welded stainless steel DSC sample tubes, that ensured no wt. loss during  
anal., were used for these measurements, making them reliable. A  
consideration of these DSC results and the known electrochem. properties  
of the cathodes may assist the selection of the most suitable lithium-ion  
cathode material for use in a particular application.  
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI A comparison of the electrode/electrolyte reaction at elevated  
temperatures for various Li-ion **battery** cathodes  
ST **battery** cathode selection electrode electrolyte reaction  
IT **Battery** cathodes  
(comparison of the electrode/electrolyte reaction at elevated temps.  
for various Li-ion **battery** cathodes)  
IT 12031-65-1, Lithium nickel oxide LiNiO<sub>2</sub> 12057-17-9, Lithium  
manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12190-79-3, Cobalt lithium oxide LiCoO<sub>2</sub>  
15365-14-7, Iron lithium phosphate LiFePO<sub>4</sub> 113066-89-0, Cobalt lithium  
nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) 221689-64-1 468772-63-6, Cobalt  
lithium manganese nickel oxide (Co<sub>0.25</sub>LiMn<sub>0.38</sub>Ni<sub>0.38</sub>O<sub>2</sub>)  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)  
(comparison of the electrode/electrolyte reaction at elevated temps.  
for various Li-ion **battery** cathodes)

L6 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2002:272907 CAPLUS  
DOCUMENT NUMBER: 136:297393  
TITLE: Method of preparation of cathode active material for  
rechargeable lithium **battery**  
INVENTOR(S): Kweon, Ho-Jin; Suh, Joon-Won  
PATENT ASSIGNEE(S): Samsung SDI Co. Ltd., S. Korea  
SOURCE: Eur. Pat. Appl., 35 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195825	A2	20020410	EP 2001-117958	20010724
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 2002071990	A1	20020613	US 2001-897445	20010703
JP 2002124262	A2	20020426	JP 2001-207684	20010709
CN 1348225	A	20020508	CN 2001-123264	20010725
PRIORITY APPLN. INFO.:			KR 2000-59336	A 20001009
			KR 2001-26468	A 20010515

AB Disclosed is a pos. active material for a rechargeable lithium  
**battery**. The pos. active material includes a core and a  
surface-treatment layer on the core. The core includes at least one  
lithiated compd. and the surface-treatment layer includes at least one

coating material selected from the group consisting of coating element included-hydroxides, oxyhydroxides, oxycarbonates, hydroxycarbonates and any mixt. thereof.

- TI Method of preparation of cathode active material for rechargeable lithium **battery**
- AB Disclosed is a pos. active material for a rechargeable lithium **battery**. The pos. active material includes a core and a surface-treatment layer on the core. The core includes at least one lithiated compd. and the surface-treatment layer includes at least one coating material selected from the group consisting of coating element included-hydroxides, oxyhydroxides, oxycarbonates, hydroxycarbonates and any mixt. thereof.
- ST cathode active material rechargeable lithium **battery**
- IT Chalcogenides  
RL: DEV (Device component use); USES (Uses)  
(cobalt lithium; method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT Carbonates, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(hydroxycarbonates; method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT Secondary batteries  
(lithium; method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT **Battery** cathodes  
Coating materials  
Coating process  
Surface treatment  
(method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT Hydroxides (inorganic)  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT Carbonates, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(oxycarbonates; method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT Hydroxides (inorganic)  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(oxyhydroxides; method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT 150-46-9, Boron ethoxide 555-31-7, Aluminum isopropoxide 1303-86-2, Boron oxide b2o3, processes 13473-90-0, Aluminum nitrate  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
(method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 12057-17-9, Lithium manganese oxide limp2o4 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 262857-75-0, Cobalt lithium nickel strontium oxide Co0.1LiNi0.9Sr0.002O2 406939-73-9  
RL: DEV (Device component use); USES (Uses)  
(method of prepn. of cathode active material for rechargeable lithium **battery**)
- IT 13780-71-7, Boronic acid 21645-51-2, Aluminum hydroxide, uses 24623-77-6, Aluminum hydroxide oxide  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(method of prepn. of cathode active material for rechargeable lithium  
**battery**)

L6 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:253367 CAPLUS  
DOCUMENT NUMBER: 136:281942  
TITLE: Secondary lithium **battery**  
INVENTOR(S): Suhara, Manabu; Sunahara, Kazuo; Kimura, Takashi;  
Mihara, Takuya  
PATENT ASSIGNEE(S): Seimi Chemical Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002100358	A2	20020405	JP 2000-289767	20000925

PRIORITY APPLN. INFO.: JP 2000-289767 20000925

AB The **battery** uses a cathode active mass mixt. contg.  
LixNiyMn1-y-zMzO2 (M = Fe, Co, Cr, and/or Al; 0.9 .ltoreq.x .ltoreq.1.2;  
0.40 .ltoreq.y .ltoreq.0.60; z .ltoreq.0.2) and LixpMn2O4 (1 .ltoreq.p  
.ltoreq.1.3) having Fd3m spinel type structure.

TI Secondary lithium **battery**

AB The **battery** uses a cathode active mass mixt. contg.  
LixNiyMn1-y-zMzO2 (M = Fe, Co, Cr, and/or Al; 0.9 .ltoreq.x .ltoreq.1.2;  
0.40 .ltoreq.y .ltoreq.0.60; z .ltoreq.0.2) and LixpMn2O4 (1 .ltoreq.p  
.ltoreq.1.3) having Fd3m spinel type structure.

ST secondary **battery** cathode lithium transition metal oxide mixt;  
nickel manganese lithium oxide cathode mixt **battery**

IT **Battery** cathodes  
(cathodes contg. (substituted) lithium manganese nickel oxide and  
spinel type lithium manganese oxide for secondary lithium batteries)

IT 128975-24-6, Lithium manganese nickel oxide (Li2MnNiO4) 179186-44-8,  
Lithium manganese nickel oxide (LiMn0.4Ni0.6O2) 287718-96-1, Lithium  
manganese nickel oxide (LiMn0.45Ni0.55O2) 405890-05-3, Cobalt  
lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 405890-06-4,  
Chromium lithium manganese nickel oxide (Cr0.1LiMn0.45Ni0.45O2)  
405890-07-5, Iron lithium manganese nickel oxide (Fe0.1LiMn0.45Ni0.45O2)  
405890-08-6, Aluminum lithium manganese nickel oxide  
(Al0.1LiMn0.45Ni0.45O2)  
RL: DEV (Device component use); USES (Uses)  
(cathodes contg. (substituted) lithium manganese nickel oxide and  
spinel type lithium manganese oxide for secondary lithium batteries)

IT 130242-31-8, Lithium manganese oxide (Li1.05Mn2O4)  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(cathodes contg. (substituted) lithium manganese nickel oxide and  
spinel type lithium manganese oxide for secondary lithium batteries)

L6 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:253124 CAPLUS  
DOCUMENT NUMBER: 136:265824  
TITLE: Nonaqueous electrolyte lithium secondary batteries  
INVENTOR(S): Satch, Kouichi; Nohma, Toshiyuki; Nakanishi, Naoya;  
Yonezu, Ikuro  
PATENT ASSIGNEE(S): Sanyo Electric Co. Ltd., Japan  
SOURCE: Eur. Pat. Appl., 14 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193782	A2	20020403	EP 2001-308352	20010928
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110253	A2	20020412	JP 2000-300708	20000929
US 2002061443	A1	20020523	US 2001-963463	20010927
CN 1345101	A	20020417	CN 2001-141055	20010929

PRIORITY APPLN. INFO.:

JP 2000-300708 A 20000929

- AB Used as the pos. electrode active substance of a lithium ion secondary cell is a mixt. of a lithium-nickel-cobalt-manganese composite oxide represented by the formula  $\text{LiNi}(1-x-y)\text{Co}_x\text{Mn}_y\text{O}_2$  wherein  $0.5 < x+y < 1.0$  and  $0.1 < y < 0.6$  and a lithium-manganese composite oxide represented by the formula  $\text{Li}(1+z)\text{Mn}_2\text{O}_4$  wherein  $0 < z < 0.2$ . The substance used gives outstanding power characteristics to the cell.
- AB Used as the pos. electrode active substance of a lithium ion secondary cell is a mixt. of a lithium-nickel-cobalt-manganese composite oxide represented by the formula  $\text{LiNi}(1-x-y)\text{Co}_x\text{Mn}_y\text{O}_2$  wherein  $0.5 < x+y < 1.0$  and  $0.1 < y < 0.6$  and a lithium-manganese composite oxide represented by the formula  $\text{Li}(1+z)\text{Mn}_2\text{O}_4$  wherein  $0 < z < 0.2$ . The substance used gives outstanding power characteristics to the cell.
- ST lithium secondary battery nonaq electrolyte; nickel lithium cobalt manganese composite oxide cathode battery
- IT Battery cathodes  
(nonaq. electrolyte lithium secondary batteries)
- IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 12057-17-9, Lithium manganese oxide  $\text{LiMn}_2\text{O}_4$  21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte lithium secondary batteries)
- IT 110665-91-3P, Lithium manganese oxide  $\text{Li}_{1.2}\text{Mn}_2\text{O}_4$  130242-30-7P, Lithium manganese oxide  $\text{Li}_{1.1}\text{Mn}_2\text{O}_4$  130242-31-8P, Lithium manganese oxide  $\text{Li}_{1.05}\text{Mn}_2\text{O}_4$  146956-42-5P, Cobalt lithium manganese nickel oxide  $\text{Co}_{0.4}\text{LiMn}_{0.2}\text{Ni}_{0.4}\text{O}_2$  182442-95-1P, Cobalt lithium manganese nickel oxide 217309-43-8P, Cobalt lithium manganese nickel oxide  $\text{Co}_{0.3}\text{LiMn}_{0.3}\text{Ni}_{0.4}\text{O}_2$  217309-45-0P, Cobalt lithium manganese nickel oxide  $\text{Co}_{0.5}\text{LiMn}_{0.1}\text{Ni}_{0.4}\text{O}_2$  252877-07-9P, Cobalt lithium manganese nickel oxide  $\text{Co}_{0.6}\text{LiMn}_{0.3}\text{Ni}_{0.1}\text{O}_2$  404904-10-5P, Cobalt lithium manganese nickel oxide  $(\text{Co}_{0.5}\text{LiMn}_{0.3}\text{Ni}_{0.2}\text{O}_2)$  404904-11-6P, Cobalt lithium manganese nickel oxide  $(\text{Co}_{0.4}\text{LiMn}_{0.3}\text{Ni}_{0.3}\text{O}_2)$   
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(nonaq. electrolyte lithium secondary batteries)

L6 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:723269 CAPLUS

DOCUMENT NUMBER: 133:269461

TITLE: Nonaqueous lithium electrolyte secondary battery

INVENTOR(S): Watanabe, Shoichiro; Iwamoto, Kazuya; Ueda, Atsushi; Nunome, Jun; Koshina, Hizuru

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 9 pp.  
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1043794	A2	20001011	EP 2000-102959	20000214
EP 1043794	A3	20021218		



R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO

US 6165647 A 20001226 US 1999-289589 19990409

CN 1270424 A 20001018 CN 2000-103653 20000229

PRIORITY APPLN. INFO.: US 1999-289589 A 19990409

OTHER SOURCE(S): MARPAT 133:269461

AB A **battery** (excellent in high temp. storage characteristics)  
comprises a pos. electrode having a pos. electrode active material contg.  
an transition metal complex oxide contg. lithium, a neg. electrode contg.  
a neg. electrode material capable of storing and releasing a lithium ion,  
and an electrolytic soln. contg. a nonaq. solvent, an electrolyte, and an  
org. compd. expressed in formula I, where R1, R2, R3, R4, R5, and R6 have  
individually at least one of H and a group contg. a vinyl group, and the  
no. of H substituent is four or less.

TI Nonaqueous lithium electrolyte secondary **battery**

AB A **battery** (excellent in high temp. storage characteristics)  
comprises a pos. electrode having a pos. electrode active material contg.  
an transition metal complex oxide contg. lithium, a neg. electrode contg.  
a neg. electrode material capable of storing and releasing a lithium ion,  
and an electrolytic soln. contg. a nonaq. solvent, an electrolyte, and an  
org. compd. expressed in formula I, where R1, R2, R3, R4, R5, and R6 have  
individually at least one of H and a group contg. a vinyl group, and the  
no. of H substituent is four or less.

ST nonaq electrolyte secondary **battery**

IT Fatty acids, uses

RL: DEV (Device component use); USES (Uses)

(esters, carbonates; nonaq. electrolyte lithium secondary  
**battery**)

IT Secondary batteries

(lithium; nonaq. electrolyte lithium secondary **battery**)

IT Intermetallic compounds

RL: DEV (Device component use); USES (Uses)

(lithium; nonaq. electrolyte lithium secondary **battery**)

IT Coordination compounds

Inorganic compounds

Organic compounds, uses

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte lithium secondary **battery**)

IT **Battery** electrolytes

(nonaq. electrolyte secondary **battery**)

IT Fluoropolymers, uses

Styrene-butadiene rubber, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(nonaq. electrolyte secondary **battery**)

IT Lithium alloy

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte lithium secondary **battery**)

IT 79-20-9, Methyl acetate 96-49-1, Ethylene carbonate 105-37-3, Ethyl  
propionate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate  
108-32-7, Propylene carbonate 554-12-1, Methyl propionate 616-38-6,  
Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl  
carbonate 872-36-6, 1,3-Dioxol-2-one 4437-85-8, Butylene carbonate  
7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite,  
uses 21324-40-3, Lithium hexafluorophosphate 174180-05-3, Cobalt  
lithium oxide CoLi0-1.2O2 174180-06-4, Lithium nickel oxide Li0-1.2NiO2  
188405-67-6, Lithium manganese oxide Li0-1.2Mn2O4 296800-04-9,  
Lithium manganese oxide (Li0-1.2MnO2) 296800-06-1, Cobalt lithium nickel  
oxide (Co0-0.9Li0-1.2Ni0.1-1O2) 296800-08-3, Cobalt lithium vanadium  
oxide (Co0.9-0.98Li0-1.2V0.02-0.1O2) 296800-10-7, Lithium nickel  
titanium oxide (Li0-1.2Ni0.1-1Ti0-0.9O2) 296800-12-9, Lithium nickel  
vanadium oxide (Li0-1.2Ni0.1-1V0-0.9O2) 296800-15-2, Lithium manganese  
nickel oxide (Li0-1.2Mn0-0.9Ni0.1-1O2) 296800-18-5, Iron lithium nickel  
oxide (Fe0-0.9Li0-1.2Ni0.1-1O2) 296800-20-9, Cobalt lithium nickel  
titanium oxide ((Co,Ni,Ti)Li0-1.2O2) 296800-21-0, Cobalt lithium

manganese nickel oxide ((Co,Mn,Ni)LiO-1.2O2) 296800-22-1, Aluminum  
 cobalt lithium nickel oxide ((Al,Co,Ni)LiO-1.2O2) 296800-23-2, Cobalt  
 lithium magnesium nickel oxide ((Co,Mg,Ni)LiO-1.2O2) 296800-25-4, Cobalt  
 iron lithium nickel oxide ((Co,Fe,Ni)LiO-1.2O2) 296800-27-6, Cobalt  
 lithium nickel zirconium oxide ((Co,Ni,Zr)LiO-1.2O2) **296800-28-7**  
 , Lithium manganese sodium oxide (LiO-1.2Mn1.1-2NaO-0.9O4)  
**296800-30-1**, Lithium magnesium manganese oxide  
 (LiO-1.2MgO-0.9Mn1.1-2O4) **296800-32-3**, Lithium manganese  
 scandium oxide (LiO-1.2Mn1.1-2ScO-0.9O4) **296800-35-6**, Lithium  
 manganese yttrium oxide (LiO-1.2Mn1.1-2YO-0.9O4) **296800-38-9**,  
 Iron lithium manganese oxide (FeO-0.9LiO-1.2Mn1.1-2O4) **296800-40-3**  
 , Cobalt lithium manganese oxide (CoO-0.9LiO-1.2Mn1.1-2O4)  
**296800-43-6**, Lithium manganese nickel oxide (LiO-1.2Mn1.1-2NiO-  
 0.9O4) **296800-45-8**, Lithium manganese titanium oxide  
 (LiO-1.2Mn1.1-2TiO-0.9O4) **296800-47-0**, Lithium manganese  
 zirconium oxide (LiO-1.2Mn1.1-2ZrO-0.9O4) **296800-49-2**, Copper  
 lithium manganese oxide (CuO-0.9LiO-1.2Mn1.1-2O4) **296800-51-6**,  
 Lithium manganese zinc oxide (LiO-1.2Mn1.1-2ZnO-0.9O4) **296800-52-7**  
 , Aluminum lithium manganese oxide (AlO-0.9LiO-1.2Mn1.1-2O4)  
**296800-54-9**, Lead lithium manganese oxide (PbO-0.9LiO-1.2Mn1.1-  
 2O4) **296800-56-1**, Antimony lithium manganese oxide  
 (SbO-0.9LiO-1.2Mn1.1-2O4)  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte lithium secondary **battery**)  
 IT 91-14-5 105-06-6, p-Divinylbenzene 108-57-6 3048-52-0,  
 1,3,5-Trivinylbenzene  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte lithium secondary **battery**)  
 IT 9003-07-0, Polypropylene  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte secondary **battery**)  
 IT 9003-55-8  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (styrene-butadiene rubber, nonaq. electrolyte secondary **battery**)

DERWENT-ACC-NO: 2000-270899

DERWENT-WEEK: 200248

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TITLE: Nonaqueous electrolyte secondary cell  
comprises a lithium-manganese compound oxide and a  
lithium-nickel compound oxide

INVENTOR: KANBE, C; KOBAYASHI, A ; NUMATA, T ; SHIRAKATA, M ;  
YONEZAWA, M

PATENT-ASSIGNEE: NEC CORP[NIDE] , NIPPON ELECTRIC CO[NIDE]

PRIORITY-DATA: 1998JP-0241918 (August 27, 1998) ,  
1998JP-0241912 (August 27,  
1998)

PATENT-FAMILY:

PUB-NO	PAGES	MAIN-IPC	PUB-DATE	LANGUAGE
WO 200013250 A1	048	H01M 010/40	March 9, 2000	J
TW 461133 A	000	H01M 004/58	October 21, 2001	N/A
JP 3024636 B2	012	H01M 004/58	March 21, 2000	N/A
JP 2000077071 A	014	H01M 004/58	March 14, 2000	N/A
EP 1117145 A1	000	H01M 010/40	July 18, 2001	E
KR 2001082179 A	000	H01M 010/40	August 29, 2001	N/A

DESIGNATED-STATES: CA KR US AT BE CH CY DE DK ES FI FR GB GR  
IE IT LU MC NL PT  
SE AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
APPL-DATE		

WO 200013250A1	N/A	1999WO-JP04608
August 26, 1999		
TW 461133A	N/A	1999TW-0114881
August 27, 1999		
JP 3024636B2	N/A	1998JP-0241918
August 27, 1998		
JP 3024636B2	Previous Publ.	JP2000077071
N/A		
JP2000077071A	N/A	1998JP-0241918
August 27, 1998		
EP 1117145A1	N/A	1999EP-0940495
August 26, 1999		
EP 1117145A1	N/A	1999WO-JP04608
August 26, 1999		
EP 1117145A1	Based on	WO 200013250
N/A		
KR2001082179A	N/A	2001KR-0702409
February 26, 2001		

INT-CL (IPC): H01M004/02, H01M004/36, H01M004/58, H01M010/40

RELATED-ACC-NO: 2000-118983

ABSTRACTED-PUB-NO: WO 200013250A

#### BASIC-ABSTRACT:

NOVELTY - The anode of a nonaqueous electrolyte secondary cell contains (A) a lithium-manganese compound oxide and (B) a lithium-nickel compound oxide having a specific surface area X of below 0.3 (m<sup>2</sup>/g) and consisting of at least one kind selected from among the group consisting of LiNiO<sub>2</sub>, Li<sub>2</sub>NiO<sub>2</sub>, LiNi<sub>2</sub>O<sub>4</sub>, Li<sub>2</sub>Ni<sub>1-x</sub>M<sub>x</sub>O<sub>2</sub> (0 less than or equal to x less than or equal to 0.5, and M represents at least one metallic element selected from among the group consisting of Co, Mn, Al, Fe, Cu and Sr).

USE - Nonaqueous electrolyte secondary cell.

ADVANTAGE - Such a nonaqueous electrolyte secondary cell is excellent in cell characteristics, and especially charging/discharging cycle

characteristic,  
storage characteristic, and safety.

DESCRIPTION OF DRAWING(S) - The drawing shows the amount of  
Mn eluted versus  
mixing ratios of LiNi compound oxides.

CHOSEN-DRAWING: Dwg.1/7

TITLE-TERMS: ELECTROLYTIC SECONDARY CELL COMPRISE LITHIUM  
MANGANESE COMPOUND  
OXIDE LITHIUM NICKEL COMPOUND OXIDE

DERWENT-CLASS: L03 X16

CPI-CODES: L03-E01B; L03-E03;

EPI-CODES: X16-B01F; X16-E01C1;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2000-082545

Non-CPI Secondary Accession Numbers: N2000-202930